CIrClE 2019

Challenges for the Islands in the era of the Circular Economy

Sustainable Mobility challenges in EU islands. The Case of Crete

Stavroula Tournaki

Renewable and Sustainable Energy Systems Lab-Technical University of Crete

Under the auspices of ENV MOVE

CIVITAS 2020 DESTINATIONS

Cleaner and better transport in cities

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6th Sustainable Mobility & Intelligent Transport conference

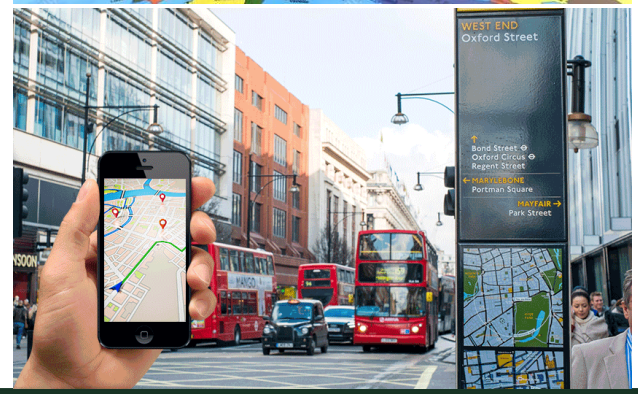
15 million Europeans live on Europe's 2400 islands.

Energy and Transport challenges for sustainable development

- Islands, as touristic destinations need to provide the high quality, **sustainable environments** expected by visitors (preserve natural assets);
- Energy security, space use, road safety, air quality and noise pollution; some transport related issues that islands have to cope with.
- The **high pressure from tourism** and **seasonal fluctuation** in their operation (winter/summer), impacts to the design of necessary infrastructure (ports, roads, energy supply systems)
- They also have to comply with the recent directives of the Clean Energy Package, when they are **missing capacity, resources and society preparation** for these changes.

Tourism and mobility: two rising markets

13 more million tourists will visit Europe every year, from 2017 to 2030 (UNWTO)



- Rising Tourism ⟹ increasing mobility needs
- **More efforts/resources needed to increase the sustainability of transport at local level.**
- High dependence on private car and individual mobility options make tourism destinations less attractive.
- Tour operators demand more sustainable operations in tourism businesses

New trends:

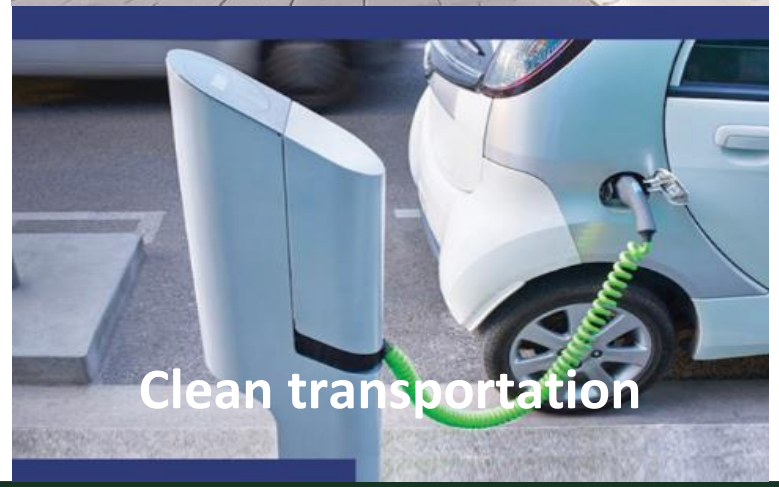
- Growth of ITC solutions & apps - Digitalisation
- Shared mobility options - Sharing economy
- Attractive Public Transport – on demand services/real time info
- Exclusively EV in European urban centers by 2050?

Global initiatives for the sustainable development of tourism

2017 INTERNATIONAL YEAR OF SUSTAINABLE TOURISM FOR DEVELOPMENT

Friend

CIVITAS DESTINATIONS



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CIVITAS DESTINATIONS –Sustainable mobility measures for green islands

29 partners/12 countries +China

- 1,2 million habitants - 6 million tourists
- Mix of institutions, mobility and tourism, complementary skills and expert team
- A set of reinforcing innovative mobility solutions in 6 touristic urban sites, to bridge the gap between sustainable mobility and tourism

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Which future for mobility and tourism?

Local measures to address global problems

- Brave and long run urban mobility plans
- Emergent new mobility businesses
- Electro mobility
- Integrated, innovative and accessible PT
- Need for a clear regulation framework with needed enforcement
- ITC and public services
- Excellence as a strong incentive for the “hosting culture”
- Integrated planning to change of mindsets
- Stakeholder engagement strategy based on results
- More livable cities/less cars

2020 CIVITAS Cleaner and better transport in cities DESTINATIONS

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THE CASE OF CRETE

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Summertime expectations

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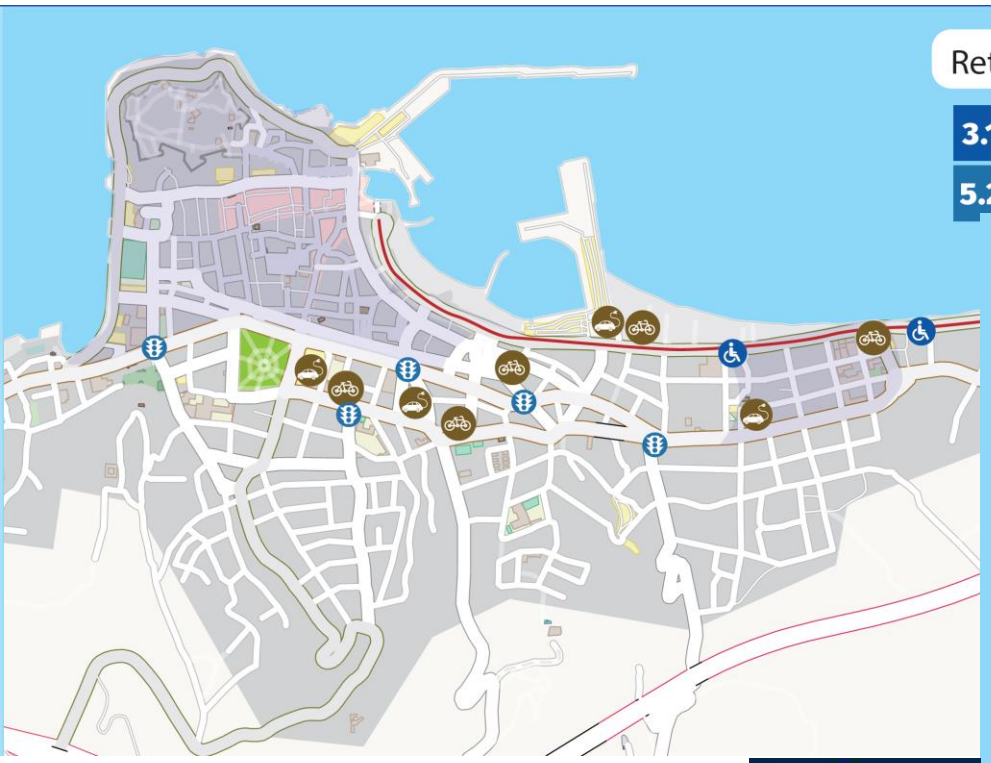
This Wintertime in Crete

Challenges to be faced during CIVITAS DESTINATIONS

- Insufficient coordination of inter-regional and airport transportation
- **High Seasonal fluctuation** due to tourism
- **Increasing traffic congestion**, environmental impacts (GHGs, urban noise)
- **Freight distribution** adds to the congestion in the historic center
- Limited accessibility and mobility choices to main attractions and the hotels areas; **unattractiveness of PT services**
- **Lack of data** on traffic load, trends user transport load
- Limited cooperation between the relevant actors
- **Opposition and inertia** of the citizens, local businesses



Rethymno city

3.1 4.1 4.2 5.1 5.2 6.2 7.1

14 Sustainable Mobility Measures in Rethymno

- **RET 2.1** SUMP integrating Tourist Mobility – SUMP Watch
- **RET 2.2** Smart systems for urban planners, PT operators and users
- **RET 3.1** Active healthy and inclusive mobility for all & Enhancing and promoting systems and services for the physically impaired
- **RET 3.2** Mobility plans for schools/ University's communities
- **RET 4.1** Uptake of electric vehicles by fleet operators
- **RET 4.2** Building a sharing mobility culture + Sharing mobility campaign
- **RET 5.1** Sustainable Freight Logistics Plan
- **RET 5.2** Cooperative Mobility - Business case on UCO to Biodiesel chain
- **RET 6.1** Sustainable mobility agency for tourists/visitors
- **RET 6.2** Low emission zones study
- **RET 6.3** Green mobility card
- **RET 7.1** Introducing Electric vehicles for Public Transport
- **RET 7.2** Improved PT for tourists and citizens

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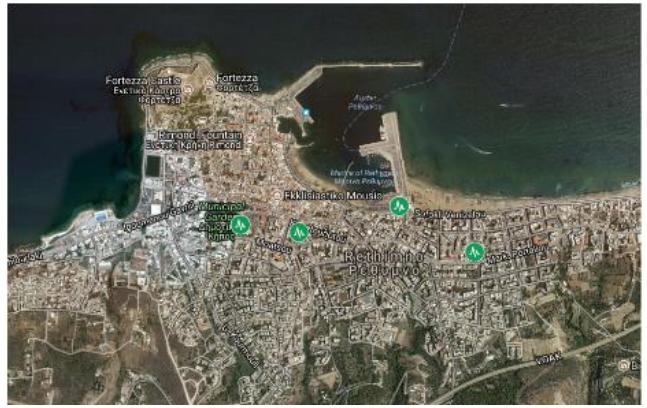
Rethymno: Launch of EVs -Installation of first public EV chargers



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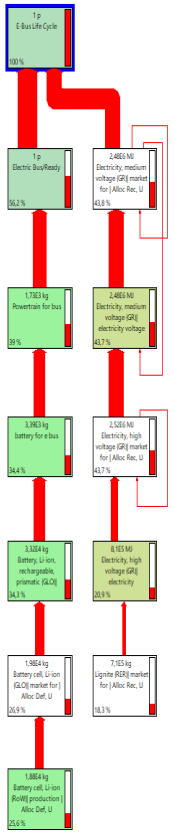
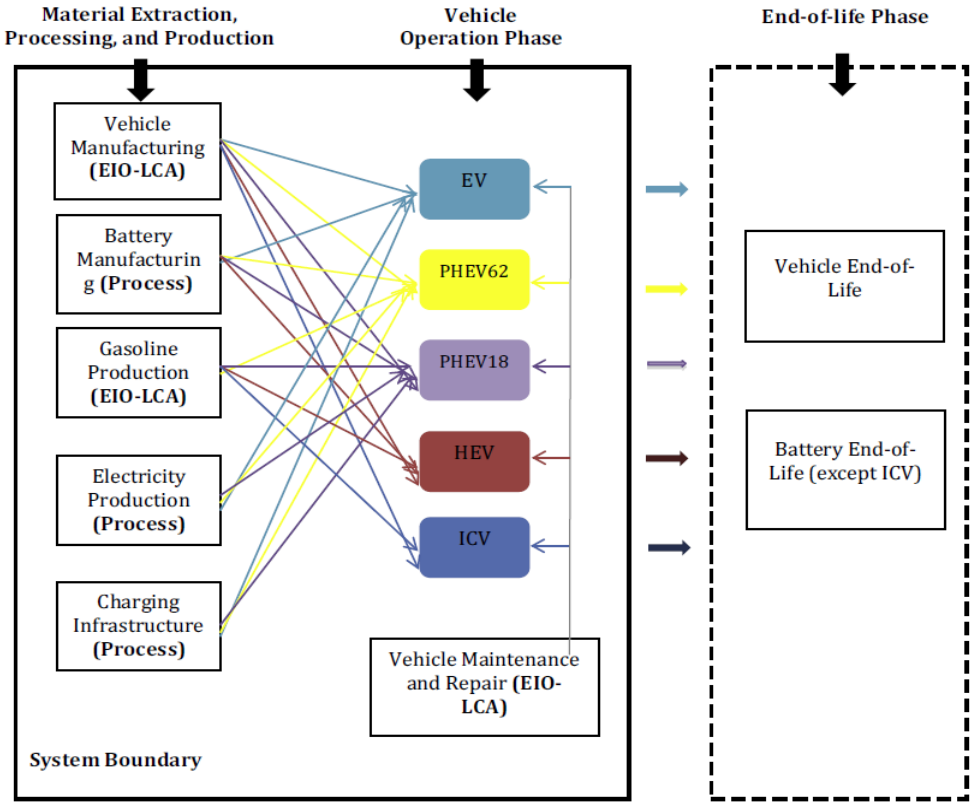
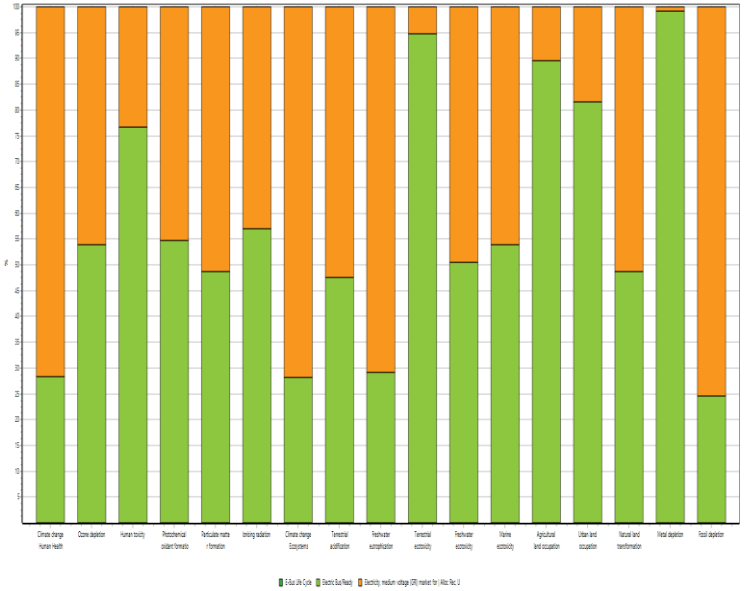
Environmental Impact using Life Cycle Assessment of the introduction of e-bus, Rethymno







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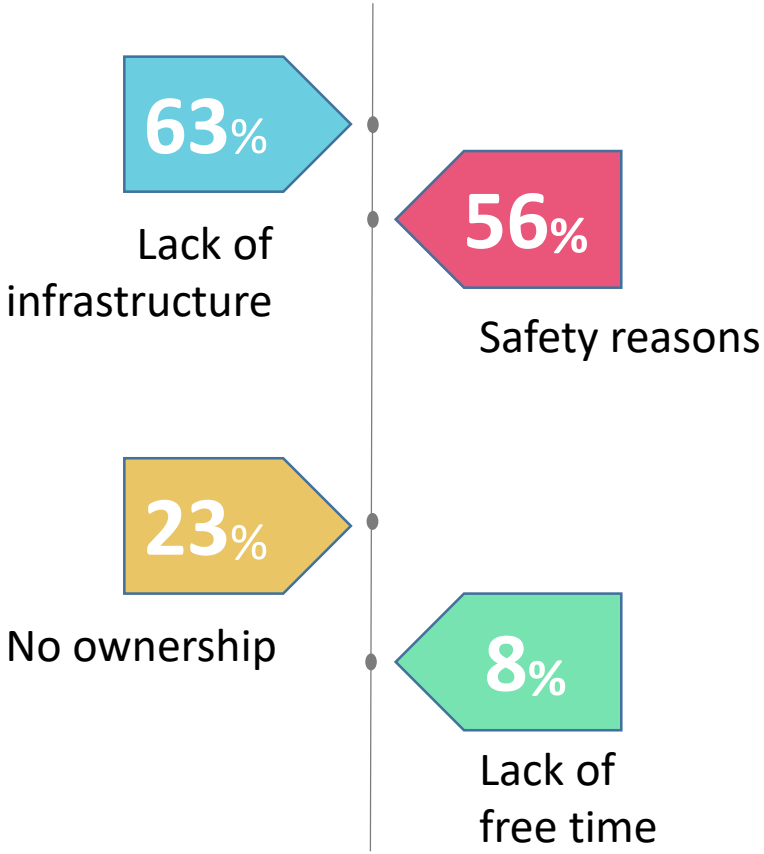
Rethymno: new e-bike sharing systems

Public-private cooperation
300 e-bikes dockless

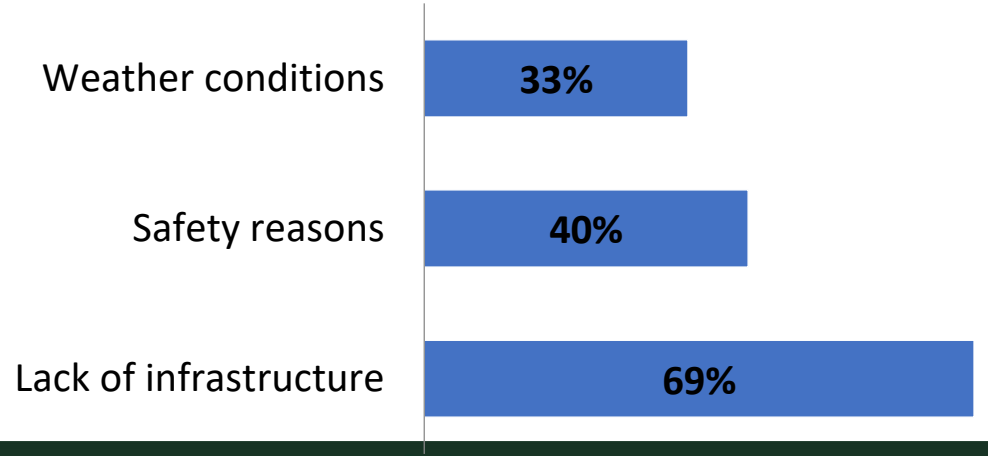
Cycling Survey

- 70% don't use bike as often as they would like

Reasons for NOT using bicycles



Reasons for infrequent use



SULP

- Urban Freight Logistic Plan - unified freight system in the historic center, consolidation centre.
- Web platform to coordinate freight demand and supply.
- Regulations

Smart systems and IT for traffic and environmental monitoring

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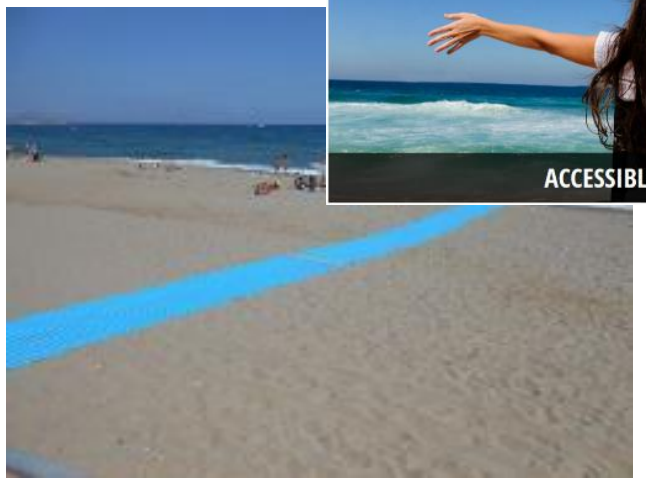
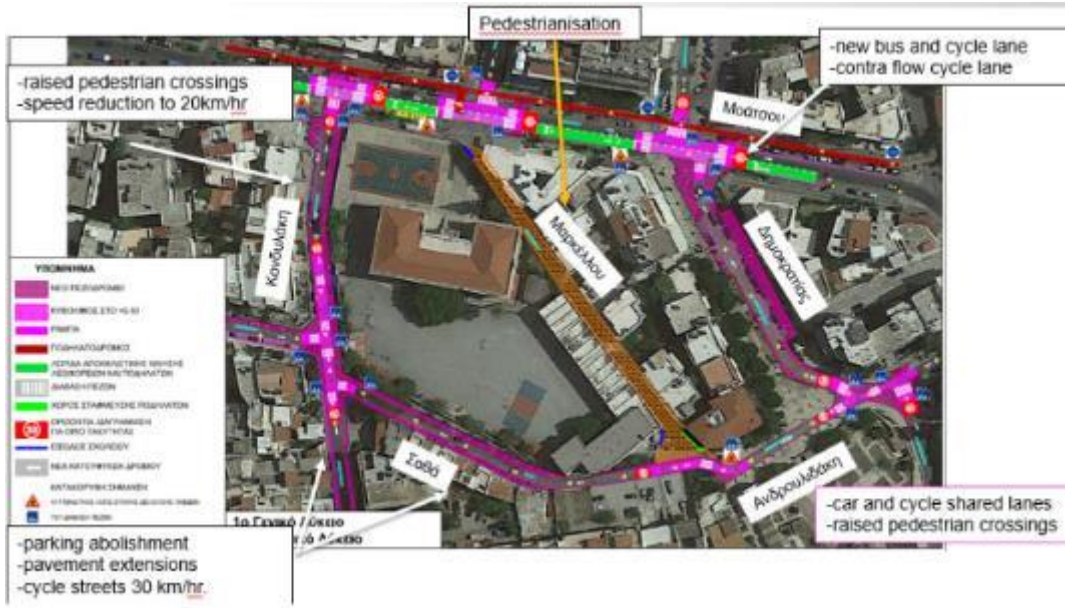
Accessibility for all



Mobility plans and safe routes to schools



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Sustainable Mobility Agency for tourists and visitors

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Co-creation approach Stakeholders engagement















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Awareness / behavioral change activities for the school community

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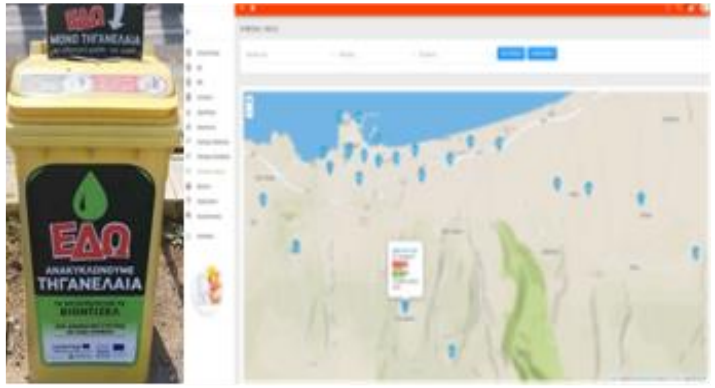
Behavioural change actions for Residents and Tourists

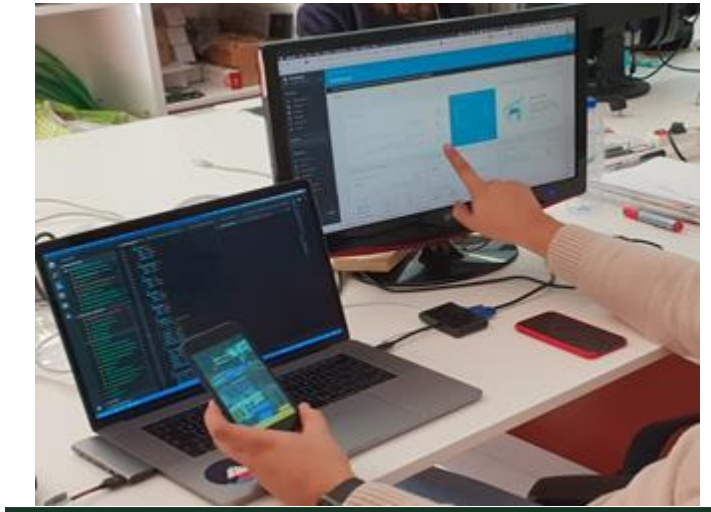
- **Design Days for Residents and Tourists**

European Mobility Week 2017, 2018

- **European Night without accidents 2017, 2018**

Business models





Limassol – Cyprus:
Green Label Award and Tourist Mobility Cards

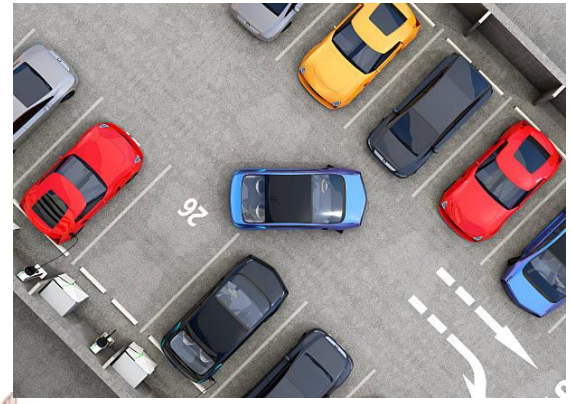
Combine tourist and mobility products:

- Tourist Mobility Card -20 businesses have offered incentives
- Green Label Award 18 hotels have signed

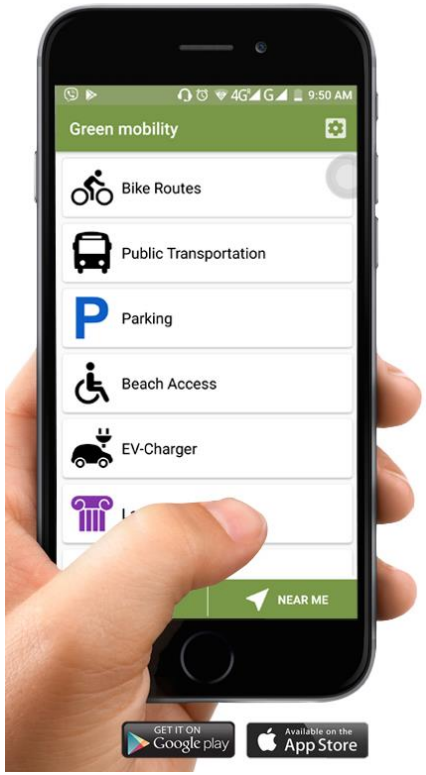
green label AWARD

Limassol – Cyprus:Smart Parking Guidance System

7 municipal parking areas



Mobility Limassol App



- Free of charge
- Ongoing upgrading
- 12 months pilot test

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Maria Stylianou Michaelidou
LIMASSOL TOURISM BOARD

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Limassol – Cyprus: Installations to assist walking and cycling

Maria Stylianou Michaelidou
LIMASSOL TOURISM BOARD

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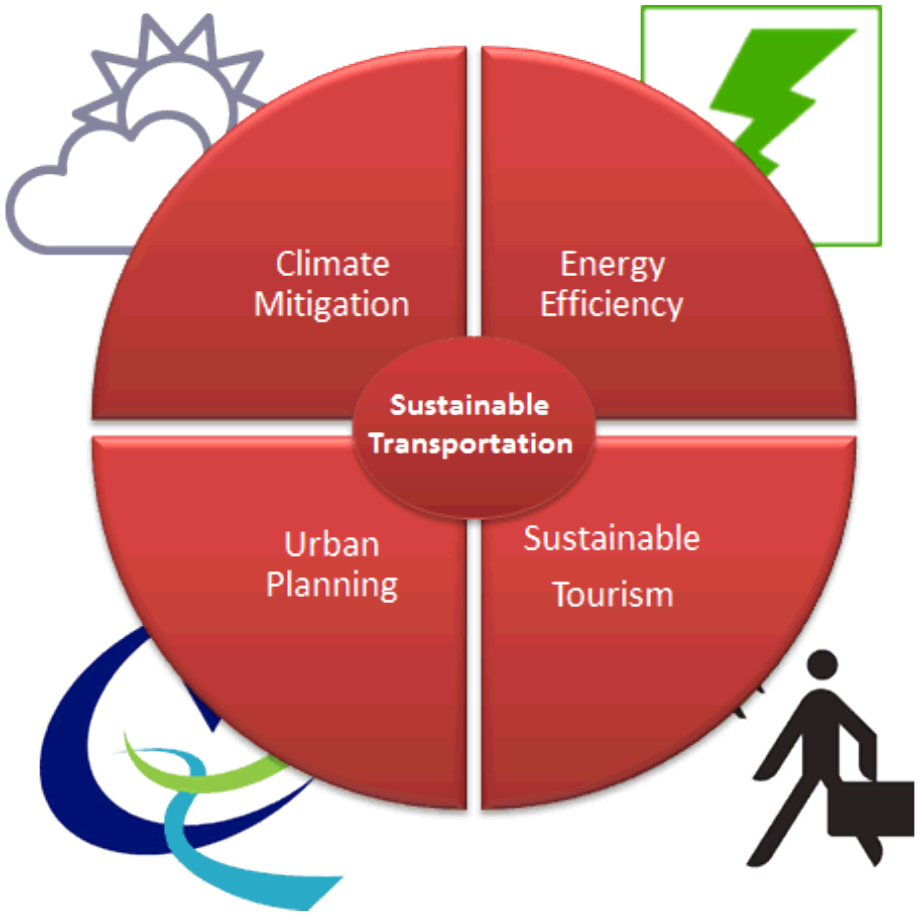
Monitoring measures effectiveness in CIVITAS DESTINATIONS



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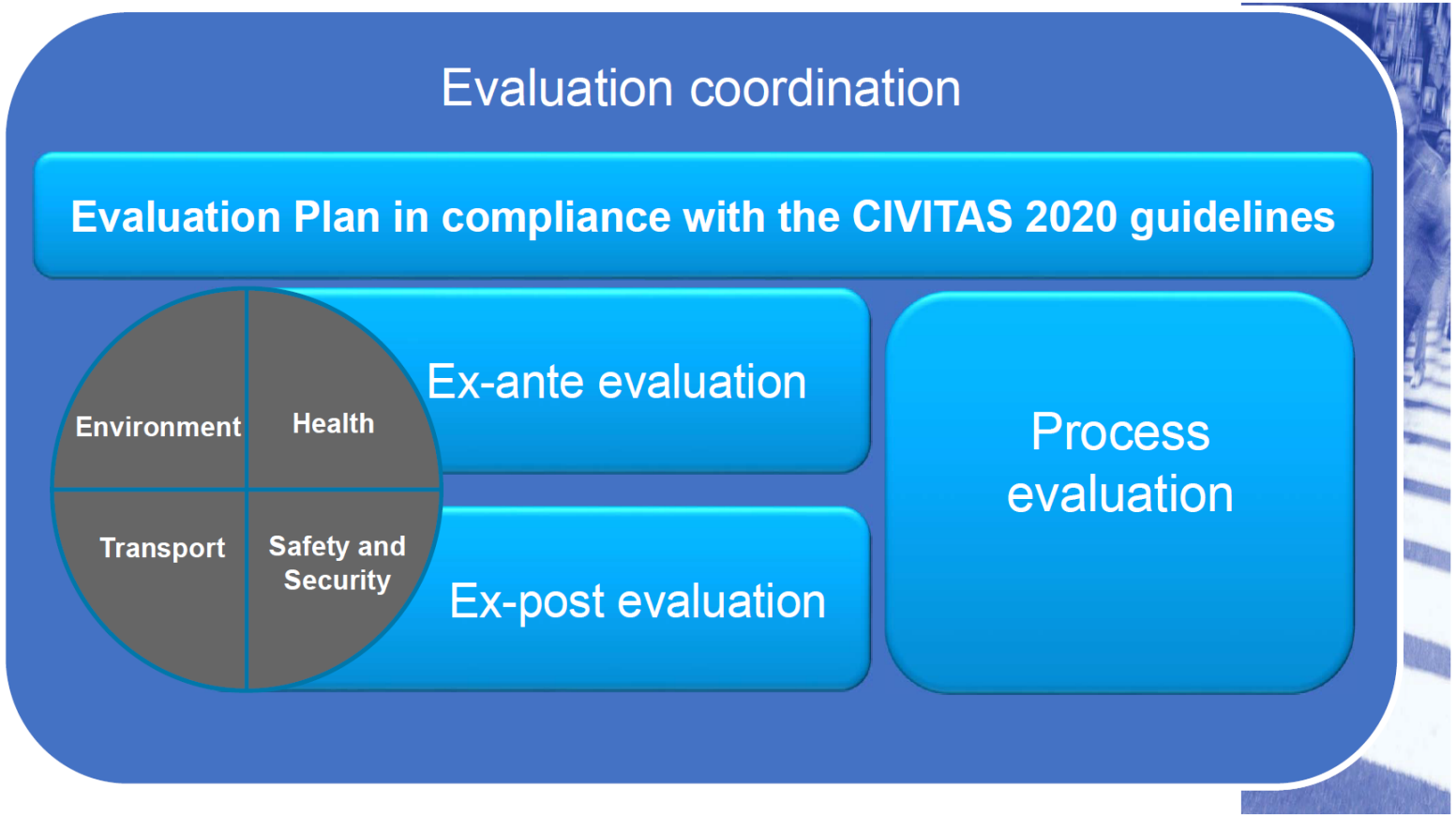


Indicators

- Transport
- Society
- Environment
- Economy
- Health

Environmental Indicators per measure - Rethymno

Measure	Selected indicators	Geographical range	Target population group
Strategic Urban Mobility Plan (SUMP) Integrating Tourist Mobility	CO_2, CO, N_x, HC, PM emissions and levels, Noise perception	City level	Public Authorities, decision makers, Urban planners
Active healthy and inclusive mobility for all	CO_2, CO, N_x, HC, PM emissions	Demonstration area	Residents and visitors, including impaired people
Mobility Plan for schools/ University	CO_2, CO, N_x, HC, PM emissions	Demonstration area	Schools and University communities
Uptake of electric vehicles by fleet operators	CO_2, CO, N_x, HC, PM emissions, Vehicle Fuel Efficiency, Fuel Mix	Demonstration area	Residents and visitors, Fleet operators
Cooperative mobility on a UCO to biodiesel transformation chain	Vehicle Fuel Efficiency, Fuel Mix, UCO collection	Demonstration area	Residents and visitors, Fleet operators
Introducing electric vehicles for Public Transport (PT)	CO_2, CO, N_x, HC, PM emissions, Vehicle Fuel Efficiency, Fuel Mix	City level	Residents and visitors, PT operator
Building a sharing mobility culture	CO_2, CO, N_x, HC, PM emissions	Demonstration area	Residents and visitors, sharing mobility service providers
Sustainable Freight Logistics Plan (SULP)	CO_2, CO, N_x, HC, PM emissions and levels, Noise perception, Vehicle Fuel Efficiency	Demonstration area	Residents and visitors, Logistics companies
New products and services combining tourism and mobility	CO_2, CO, N_x, HC, PM emissions	City level	Residents and visitors, tourism stakeholders
Improved PT for tourists and citizens	CO_2, CO, N_x, HC, PM emissions	City level	Residents and visitors, PT operator, tourism stakeholders

Rethymno, 2-level monitoring scheme
Measurement points

1	2	3	4	5	6	7	8	9
North city entrance	Hospital	West city entrance	Seaside peripheral	Old Harbour	Coastal avenue	City centre, Bio	City centre, town hall	City centre Old town

SUMP-PLUS: Sustainable Urban Mobility Planning: Pathways and Links to Urban Systems (Horizon 2020, Sep 2019-Aug 2022)

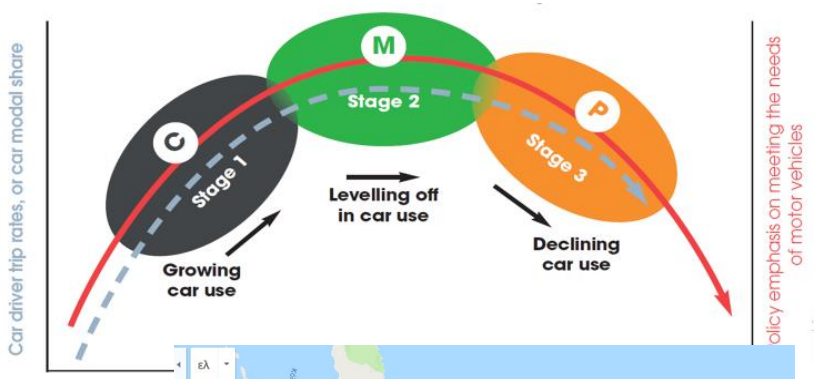
Methodology and **supporting analytics on how to customize the pathway to cities** with different characteristics, capabilities, data/resources, aspirations. Practical **guidance tools** and **training programmes**

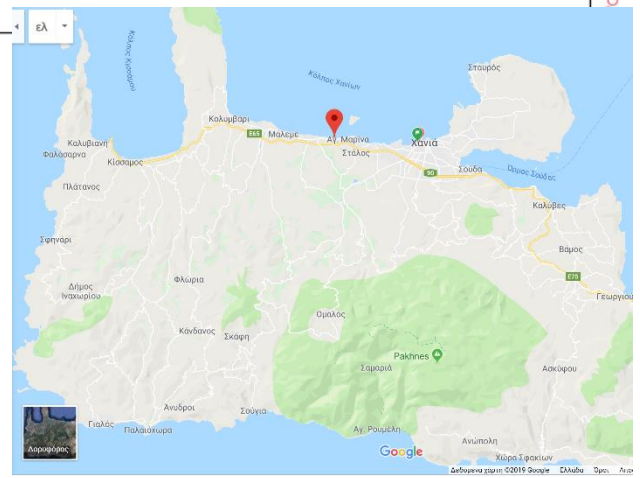
Stad Antwerpen (ANT) – Belgium	**Comune di Lucca (LUCCA) - Italy**
University College London (UCL) – UK	**Transport for Greater Manchester (TfGM)–UK**
Polytechneio Kritis (TUC)- Greece	**Fondation Nationale des Sciences Politiques (FNSP) – France**
Municipality of Platanias (MP) - Greece	**European Integrated Project (EIP) – Romania**
ICLEI European Secretariat Gmbh (ICLEI) - Germany	**Forschungsgesellschaft Mobilität – Austrian Mobility Research FGM – AMOR Gemeinnützige GMBH (AMOR) – Austria**
Union International Des Transports Publics (UITP) - Belgium	**MemEx S.r.l. (MEMEX) – Italy**
Municipality of Alba Iulia (ALBA) - Romania	**Space Syntax Ltd. (SPACE) – UK**
Klaipedos Miesto Savivaldybes (KCM) - Lithuania	**Vectos (South) Ltd. (VECTOS) – UK**

SUMP-PLUS: Sustainable Urban Mobility Planning: Pathways and Links to Urban Systems (Horizon 2020, Sep 2019-Aug 2022).

Objectives

1. To develop and apply a set of **context-specific mobility transformation pathways**
2. To demonstrate how cities can develop stronger **links with other urban system components**
3. To **identify new innovative solutions**
4. To demonstrate **new partnerships and business models**





Six <u>co-created</u>, <u>city-led innovation</u>
Laboratory test cases (CL)
Platanias-Crete, Klaipedia-Lithuania, Alba Julia-Romania.
Lucca-Italy,Antwerp-Belgium, Manchester-UK

PATHWAYS Objective 1 | LINKS Objective 2 | SOLUTIONS Objective 3 | PARTNERSHIPS Objective 4

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Transport Challenges

- Behavioural change of the citizens, new generation on the front run
- Co-operation of authorities and mobility/tourism and logistics stakeholders
- Sharing economies, innovative cooperative management tools, new business models
- Financing of infrastructure
- Impacts assessment (environment, energy, economy, transport, social, health) for sustainable strategies and action plans

Thank you for your attention

Stavroula Tournaki
Technical University of Crete

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